Reach and Impact of an EHR Pain Care Clinical Decision Support Program

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Introduction

- Chronic pain affects over 100 million adults in the US every year, making pain care 1 of the top reasons for ambulatory office visits in the US.[1] The total financial cost of pain to society, combining health care and productivity estimates, ranges from $560 to $635 billion[2]
- Assessment of pain is a critical step to providing effective pain management

Objectives

- To evaluate the efficacy of 3 chronic pain clinical decision support (CDS) alerts at the point of care in an ambulatory, cloud-based electronic health record (EHR):
  - Describe the reach, impact, and efficacy of each CDS alert on provider behavior
  - Evaluate serial clinicians assessment of chronic pain through the use of a pain scale and reminders to intermittently review care plans
  - Assess the sustainability of newly established behaviors as a result of CDS use

Methods

Methods – Program Description

- In July 2016, the Practice Fusion EHR platform was used to implement 3 pain CDS alerts, based on evidence based guidelines, including:[3, 4]
  - Prompt health care practitioner (HCP) to document <u>pain score</u> (scale = 0-10, 10 worst possible pain); diagnosis of chronic pain, two or more pain scores of ≥ 4 in the last 3 months
  - Perform a functional assessment of chronic pain using the <u>Brief Pain Inventory (BPI)</u> with a chronic pain diagnosis or pain score of ≥ 4 in the last 3 months
  - Manage follow-up care by documenting pain score or BPI from the last 3 months in the care plan
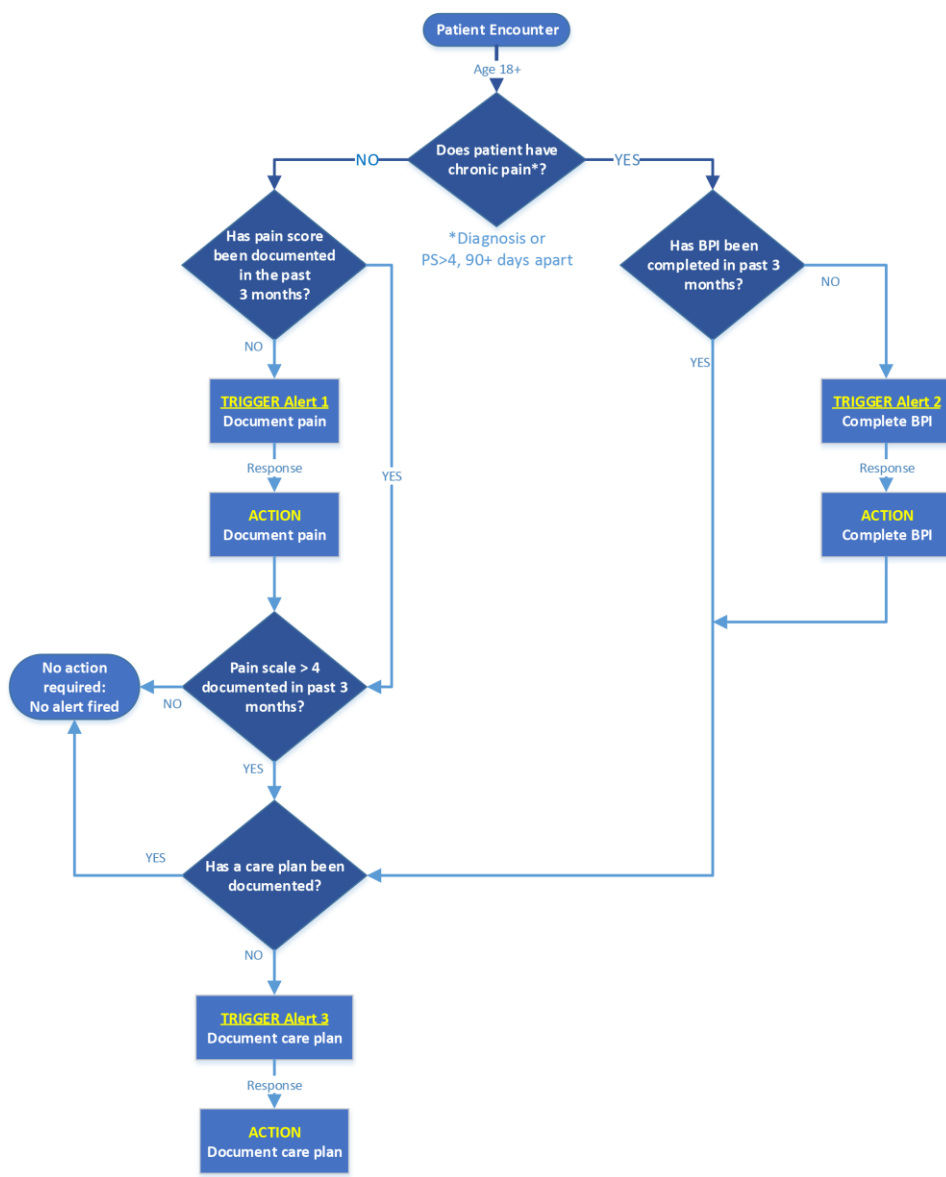
Methods – Program Setting

- Large US ambulatory cloud-based EHR (Practice Fusion EHR Platform)
  - 25,000+ practices across 50 states
  - Mix of primary care (40%) and specialty care (60%) HCPs
  - Facilitates 5M+ office visits per month, or 6.7% of US ambulatory care
- Program Inclusion Criteria, Practices:
  - At least 1 patient visit in the recent month (currently active)
  - At least 1 patient visit 6+ months ago (active 6 months ago)
  - Located in the US

Methods – Program Description

- Alerts were triggered by clinical logic at the patient-level and displayed to HCPs at point of care during the patient encounter (Figure 1)

Methods – Program Design: Test & Control Groups

- Eligible practices were randomly assigned to either the CDS Alert or No CDS Alert study groups. Stratified random sampling was used to create a 10% sample of control practices
- Matching practices were identified and found to be statistically similar on 9 variables (Table 1)

FIGURE 1: Chronic Pain Program CDS Alert Logic

Methods – Program Evaluation

- Evaluation considered change from the pre-alert to post-alert phase, as well as differences between alert and control cohorts
- Process evaluation for the CDS cohort considered HCP actions taken in response to program alerts. Encounter-level metrics for CDS alerts included the number of: alerts fired, alerts responded to in any manner, and documentation actions engaged

Methods – Overall Program Activity

- Program run time: July 2016 to June 2017. Included over 13.4M distinct patients across all 50 states
- ~12.3M patients were assessed for pain. 1.6M (Table 2) were found to have chronic pain (as defined as pain score ≥ 4 over 3 months, or 13.4% of patients assessed for pain). This is consistent with reported statistics of patients with chronic pain[1]
- The BPI alert was fired at all encounters where the patient documented chronic pain

Methods – Overall Program Activity (Cont'd)

Table 1: Group Assignment Variables

Matching variable	P-value
Practice specialty	0.53
Practice size	0.81
Visits for patients with chronic pain	0.83
Total pain medication prescriptions	0.60
Percent of patients with pain scores documented	0.34
Percent of patients with care plan documentation (care plan proxy)	0.93
Percent of patients with survey data (BPI proxy)	0.64
Patient gender (% Male)	0.74
Patient age	0.87

Table 2: Overall Program Activity

Alert	Visits Where Alert Fired	Unique Patients With Alert Fired	Unique Practices
Assess patients for pain	40,278,584	12,293,686	25,287
Complete BPI	9,837,619	1,645,178	16,143
Document care plan	1,957,184	705,297	8,636

Results

Results – Program Impact

- The CDS program resulted in sustained and significantly higher use during the 12 month program, as compared to a control group not receiving alerts (p ≤ 0.0001)
- Program impact is noted by an increase in pain score documentation for an existing EHR data element and the number of BPIs and care plans entered for new EHR data elements (Figures 2)

- Existing data element
  - 345,999 (1.25x control (25%>control)) more patients with pain scores
- Documentation for new data elements (BPIs and care plans)
  - 71,093 more patients with BPI
  - 63,899 more patients with pain care plans
- Documentation of opioid therapy in care plans shifted from 33.1% at start to 20.2% at conclusion

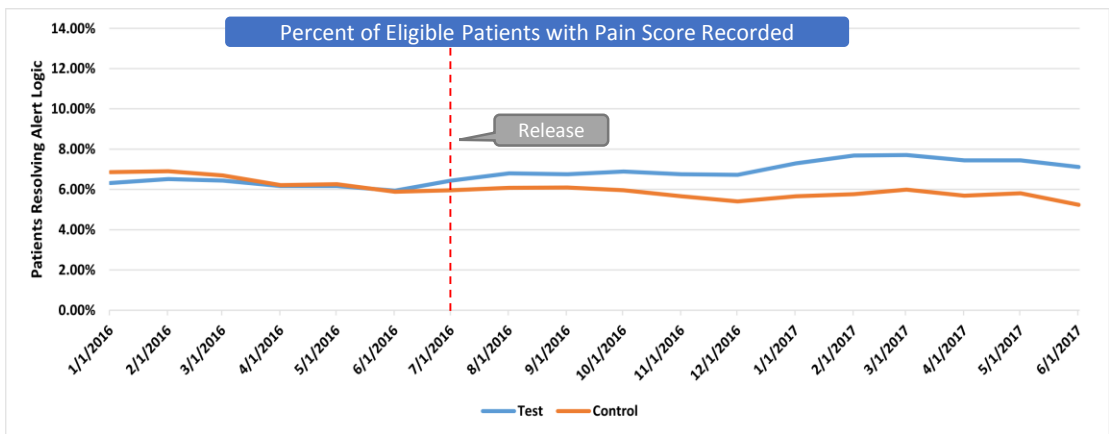#### Figure 2 (a): Program Activity Over Time (Pain Score)

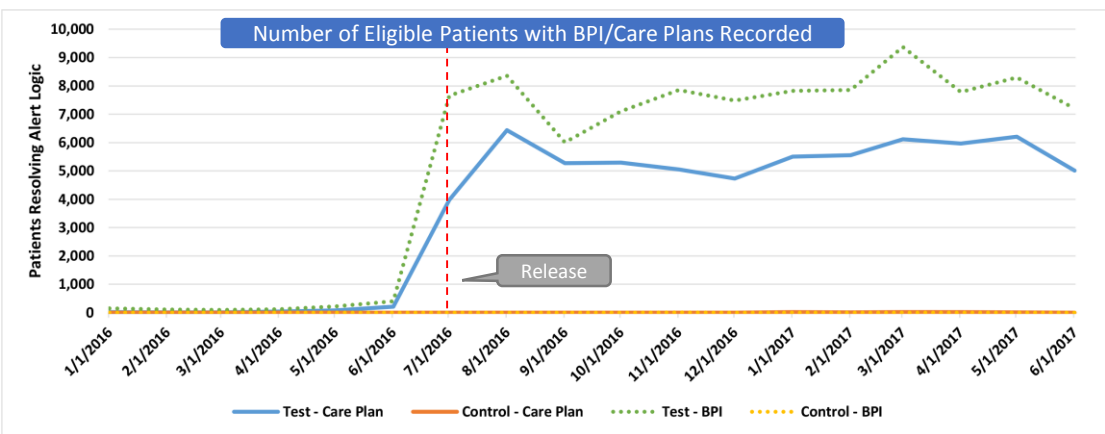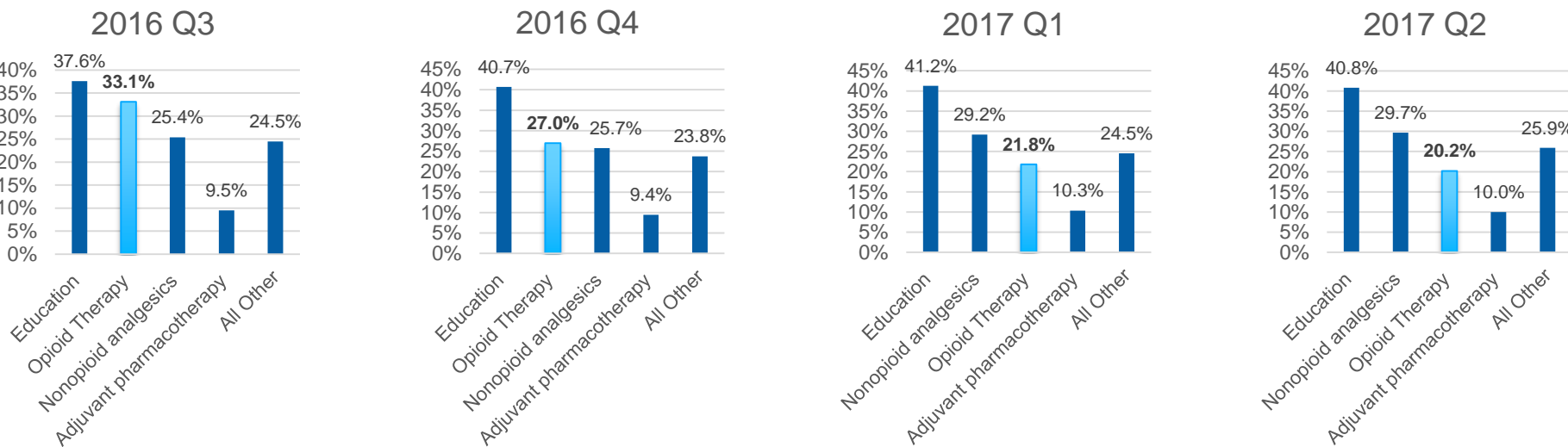#### Figure 2 (b): Program Activity Over Time (BPI & Care Plan)

Figure 2 (c): Pain Care Plans

"Education", was the most common care plan type. In order, the next 2 most common were "Opioid Therapy" and "Nonopioid analgesics". Over the course of the program, the order changed from opioid therapy to non-opioid therapy in position 2 and 3. (Figure 2c)

Discussion

Discussion: Sustained Response

- Program alerts were delivered at the point of care during the patient encounter using a standard format, with which users were already familiar, and included a direct deep-link to work flow documentation actions
- A statistically significant increase in documentation actions resulted for all 3 alerts, when compared to a matched, comparison set not receiving alerts
- A sustained response was demonstrated over the 12-month program, with possible explanations including:
  - Program alerts were related to a single PQRS clinical quality measure, pain assessment and follow-up, that may have had some impact on HCP reimbursement
  - Delivery mechanism (Practice Fusion Platform)
  - Perceived value to HCPs
  - Outside factors related to the topic of pain medications in the medical literature and media. Media attention related to the "opioid epidemic" may have increased HCP awareness and willingness to respond to chronic pain management alerts

Limitations

- This program ran during a time when attention to chronic pain and overuse of medication in pain treatment was a national issue. This may have influenced provider behaviors
- This program did not examine provider-level care or patient-level measures for improved clinical processes or outcomes
- Patients were not matched for diagnosis, duration of illness, or duration of therapy

Future Plans

- Test platform value for CDS in other disease states (such as cardiac, constipation or other disease states)
- Run a focused study on diagnosis-matched patients to explore adherence and persistence of the intervention in a specific disease state
- Include patient-level outcomes for the current cohort and/or additional cohorts
- Modify program to send alerts to HCPs for whom chronic pain is relevant to their practice

Conclusions

- CDS can be an effective tool to help physicians follow chronic pain management clinical guidelines and improve documentation of care-related data and activity
- Provider acceptance of pain care plan prompts on the EHR platform was positive with completion of prompted actions sustained over a 12-month program
- It is possible to create a sustainable CDS that demonstrates changes in clinical decision making by clinicians with standard off-the-shelf EHR tools
- Reminders may have a sustained influence on the rate of opioid prescribing as documented in patient care plans

References

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3. Volkow ND, McLellan AT. Opioid abuse in chronic pain--misconceptions and mitigation strategies. N Engl J Med. 2016;374(13):1253-1263.
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